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Teachers and mobile learning perception: towards a conceptual model of mobile learning for training

Iin Karmila Yusri[a,b,*], Robert Goodwin[a], Carl Mooney[a]

[a]*School of Computer science, Engineering and Mathematics, Flinders University, Australia*
[b]*Computer and Networking Engineering Study Program, Ujung Pandang State of Polytechnic, Indonesia*

Abstract

Before designing and implementing a mobile learning system, it is important to ascertain the perception of future users towards mobile learning since their perception will influence their willingness and readiness to use the system. This research investigated the perception of teachers in Indonesia of mobile learning to ascertain their readiness to engage in mobile learning for training. This study conducted a survey with 308 high school teacher respondents. The results show that teachers in Indonesia had positive perception of mobile learning and were looking forward to engage in mobile learning. Financial and device issues were not obstacles for the teachers to participate in a mobile learning environment. Interestingly, the knowledge and readiness for mobile learning of teachers who taught ICT subject was lower than teachers with mathematics, science, and other subjects. Findings obtained from this study are used as a base for designing and developing a mobile learning system for ICT training for teachers in Indonesia.

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Keywords: teachers, mobile learning, perception, training system

1. Introduction

With the rapid development of mobile technology and the increasing availability of wireless mobile devices in everyday life, mobile learning can be a solution to the problem of delivering ICT training to teachers in Indonesia. These problems include a lack of opportunity for teachers, geographical challenges and, time and cost problems (Yusri and Goodwin, 2013). Mobile learning is a type of learning model allowing learners to obtain learning

* Corresponding author. Tel.: +61-8-8201-5678
E-mail address: iin.yusri@flinders.edu.au

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materials anywhere and anytime using all kind of wireless handheld devices such as; mobile phones, personal digital assistant (PDA), wireless laptop, personal computer (PC), and tablet (Ozdamli and Cavus, 2011).

The potential of a mobile learning system in a training environment was studied by Sampson (2006) and Tucker and Winchester III (2009). The research suggested that mobile learning is suited to deliver training and provides the benefit of personalized education anytime and anywhere. Another study on mobile learning for training used a Mobile Performance-centered Self-directed System (mPSS) for education and training in engineering education (Martin, Gil, Lopez, Oliva, Monteso, Martinez, & Peire, 2009). This project was implemented in real training settings and users expressed satisfaction with the system.

Mobile learning has proven to be an effective tool for skill training. The Mobile Learning Network (MoLeNET), the largest mobile learning initiatives in Europe, has conducted projects specifically aimed at using mobile technologies for vocational learning in areas such as hair beauty, heating and ventilation, plumbing, and wood machining (Douch et al, 2010). The projects were successful and highlighted the key benefits of mobile learning for training, which are engagement with learning, flexibility of learning, learner retention and achievement, personalization of learning, and access to learning resources.

Cisco learning network also develop mobile learning applications for IT training (Cisco, 2012). These applications have been developed specifically for network engineers who wish to take the CCNA certification but they are only available for selected brands of video-enabled mobile devices including Apple, Android, and BlackBerry.

Before designing and implementing a mobile learning system, it is important to ascertain the perception of future users towards mobile learning since their perception will influence their willingness and readiness for using the system (Mahat et al, 2012). Studies about perception and readiness on mobile learning in the literature had mostly university students as their object of research. Research that focuses exclusively on teachers' perception and readiness on mobile learning is very limited

The main propose of this study is to investigate the perception of teachers in Indonesia towards mobile learning in order to evaluate their readiness to engage in mobile learning for training. Information obtained from this study will be used as a basis for designing and developing the ICT training system.

2. Methodology

The participants of this survey comprised teachers from general and vocational high schools in South Sulawesi Province, Indonesia. The reason that teachers from general and vocational high schools were used is because ICT will be integrated into all subjects in the high school curriculum and therefore the data that will be collected will be of use in designing an ICT Training System specifically for them.

The questionnaire comprised two sections; the first section was related to the demographics of the participants and the second section consisted of questions relating to teachers' perception on mobile learning. All questions had a five-point graded response scale. Teachers in this study were recruited directly and the questionnaires were handed out to teachers in their school where they were asked to complete them either before, while waiting for their class, or after the class had finished.

The survey was carried out for a period of 2 months in July – August 2013 with 308 participants from 25 high schools in South Sulawesi Province, Indonesia. Ethical approval for the survey was granted by the Flinders University Social and Behavioural Research Ethics Committee (Project No. 6095). Research permission for the survey was also granted by Regional Government of South Sulawesi Province, Indonesia (No. 0114/P2T-BKPMD/19.36/06/VII/2013).

3. Findings

3.1. Teachers' demography profile

The following section summaries the respondent profile. Table 1 indicates that there were more female than male teachers in this study (67.2% compared to 32.8%) and the majority were aged between 41 to 50 years old, which is 41.2% of the participants.

Table 1. Teacher demography and background

Teacher demography and background (N=308)	Frequency	Percentage (%)
Gender		
Female	207	67.2
Male	101	32.8
Age range		
21-30	48	15.6
31-40	83	26.9
41-50	127	41.2
51-60	48	15.6
>60	2	0.6
Educational Background		
Diploma	24	7.8
Bachelor	224	72.7
Magister	57	18.5
Doctoral	3	1.0
Years of service		
0-7	84	27.3
8-14	59	19.2
15-21	78	25.3
22-28	59	19.2
29-35	24	7.8
>35	4	1.3
Type of school		
General high school:		
- Junior high school	175	56.8
- Senior high school	86	27.9
Vocational high school	47	15.3
Subject of teaching		
Mathematics	46	14.9
English	31	10.1
Science	49	15.9
Social science	55	17.9
Bahasa	32	10.4
ICT	19	6.1
Other subject	76	24.7

In terms of academic qualification, the highest level achieved by most of participants was a Bachelor Degree (72.7%), followed by Master's Degree (18.5%). Only 7.8% of teachers had achieved a Diploma. Overall, there were two distinct groups of respondents according to their years of service as teachers, which are 7 years and less (27.3%) and between 15 to 21 years (25.3%).

Of the participants, 84.42% were teaching in a general high school, consisting of 178 junior high schools and 82 senior high schools. The remaining 15.58% respondents were teaching in a vocational high school. Most respondents were teaching Social Sciences, Science, Mathematics, English and Bahasa.

3.2. Perception of mobile learning

This section deals with the assessment of participants' perception of mobile learning. Teachers were given 20 statements and were asked to rate the statements using a 5-point scale. The statements were adapted from Hussin et al (2011) and were divided into five groups; knowledge, learning method, device, financial and readiness on mobile learning.

Table 2 shows the feedback from teachers on statements about knowledge towards mobile learning. The majority of teachers (55.5%) either disagreed or strongly disagreed that they knew what mobile learning was about. The table also shows that 14% of teachers indicated a neutral response and 30.5% agreed and strongly agreed that they had

clear idea about mobile learning. Most of the teachers (87.9%) either agreed or strongly agreed that they wanted to know more about mobile learning. 10.2% of teachers indicated a neutral response and only 1.9% disagreed regarding seeking more information about mobile learning. 90.2% of teachers agreed that mobile learning is good for working adults for self-development. Even though 24% of total teachers thought that mobile learning will make their life difficult, there were 83.4% of teachers who agreed that mobile learning can save their learning time.

Table 2. Perception on mobile learning

No.	Statements	SA (%)	A (%)	N (%)	D (%)	SD (%)
Knowledge on mobile learning						
A1	I know what mobile learning is about	11.7	18.8	14.0	52.3	3.2
A2	I want to know more about mobile learning	28.2	59.7	10.1	1.9	0
A3	I think mobile learning is good for working adults who want to learn new skill for their professional development	32.1	58.1	8.1	1.0	0.6
A4*	Mobile learning will make my life difficult.	5.2	18.8	25.3	45.8	4.9
A5	Mobile learning will save my learning time	17.2	66.2	14.9	1.6	0
Learning method issues						
B1*	I prefer conventional learning than mobile learning	10.4	13.3	34.1	33.8	8.4
B2	I would like my tutor/instructor to integrate mobile learning in my training/course in addition to face-to-face meetings	30.8	58.8	9.1	1.3	0
B3	I would like my tutor/instructor to integrate mobile learning besides online forum in my training/course	18.8	61	18.8	1.3	0
B4	Mobile learning is an alternative to web based learning	17.5	54.9	25.6	1.9	0
B5	Mobile learning is an alternative to conventional learning	17.9	35.4	29.2	16.2	1.3
Device issues						
C1	I don't know how to use 3G facilities in my mobile phone	7.8	46.1	17.2	25.3	3.6
C2	I need to learn how to use my mobile phone for mobile learning	25.0	64.0	8.4	2.3	0.3
C3	I will upgrade my mobile phone if mobile learning is going to be implemented in my course	17.9	48.4	26.0	7.5	0.3
C4*	I think I am not ready for mobile learning using mobile phone facility.	3.2	8.8	15.9	53.6	18.5
Financial issues						
D1	I don't mind paying extra money for mobile learning	22.4	54.5	15.9	7.1	0
D2*	I am afraid I will spend more money on my mobile phone bill because of mobile learning	6.5	26.6	24.7	39.9	2.3
Readiness on mobile learning						
E1*	I don't think I want to be involved in mobile learning	10.4	14.6	12.7	54.9	7.5
E2	I am not ready for mobile learning now	8.4	48.4	20.8	16.2	6.2
E3	I will be ready for mobile learning after 2 years	18.8	58.1	18.5	3.9	0.6
E4	I am looking forward to engage in mobile learning	20.8	59.7	17.5	1.9	0

*negative statements
Legend: SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

In terms of learning method, 42.2% of teachers preferred mobile learning over conventional learning. Most participants (89.8%) strongly agreed and agreed that mobile learning should be integrated into the face to face meeting method. 79.5% of teachers strongly agreed and agreed that mobile learning should be combined in their training beside an online forum. More than 50% of participants agreed that mobile learning is an alternative to conventional learning and 74.4% strongly agreed and agreed that mobile learning is an alternative for web-based learning.

There were four statements given to participants in terms of device issues, of which 53.6% of teachers agreed that they did not know how to use 3G facilities in their mobile phone. However, 89% of them had a willingness to learn how to use their mobile phone for mobile learning and 63% of teachers were ready to upgrade their mobile phone to participate in a mobile learning course.

Financial issues is not an obstacle for the participants to engage in mobile learning. The majority of teachers

(76.9%) either agreed or strongly agreed that they did not mind paying extra money for mobile learning. The table also shows that 15.9% of teachers indicated a neutral response and only 7.1% disagreed. Furthermore, 43.2% of teachers disagreed and strongly disagreed that they were afraid they will spend more money on mobile phone bills because of mobile learning. 24.7% of teachers indicated a neutral response and 32.5% either agreed or strongly agreed to the statement.

Table 2 also shows that 62.5% of teachers disagreed and strongly disagreed with the statement "I don't think I want to be involved in mobile learning". In terms of implementation time of mobile learning, only 22.2% of teachers felt ready, if mobile learning is implemented now, and 76.9% felt ready if mobile learning is applied in two years. Overall most teachers (80.5%) were looking forward to engage in mobile learning.

3.3. Cross-tabulation of demography profiles associated with perception on mobile learning

This study also investigated and identified the individual factors associated with the groups' statements. The mean of all responses from each respondent in a group statement was taken to form an individual mean. Following this, the group mean was obtained from the mean of individuals' means. The respondents who have an individual mean greater than or equal to the group mean were categorized as 'high', while the respondents with individual means lower than the group mean were labeled 'low'. These data were then cross tabulated with the respondent profiles. Table 3 shows the knowledge, learning method, device, financial and readiness issues by each category in teachers' demography profile.

Table 3. Results of cross-tabulation

N = 308	Knowledge		Learning method		Device		Financial		Readiness	
	% High	% Low	% High	% Low	% High	% Low	% High	% Low	% High	% Low
School										
Junior High School	62.86	37.14	70.86	29.14	87.43	12.57	93.14	6.86	56.57	43.43
Senior High School	67.44	32.56	83.72	16.28	90.70	9.30	96.51	3.49	52.33	47.67
Vocational High School	70.21	29.79	70.21	29.79	89.36	10.64	93.62	6.38	59.57	40.43
Gender										
Female	60.87	39.13	74.40	25.60	87.92	12.08	93.72	6.28	57.00	43.00
Male	74.26	25.74	74.26	25.74	90.10	9.90	95.05	4.95	53.47	46.53
Age (years)										
21-30	83.33	16.67	64.58	35.42	79.17	20.83	93.75	6.25	52.08	47.92
31-40	71.08	28.92	85.54	14.46	97.59	2.41	95.18	4.82	62.65	37.35
41-50	62.20	37.80	75.59	24.41	86.61	13.39	95.28	4.72	51.97	48.03
51-60	45.83	54.17	62.50	37.50	89.58	10.42	89.58	10.42	58.33	41.67
>60	50.00	50.00	50.00	50.00	50.00	50.00	100.00	0.00	50.00	50.00
Educational Background										
Diploma	83.33	16.67	70.83	29.17	83.33	16.67	100.00	0.00	50.00	50.00
Bachelor	62.05	37.95	71.88	28.13	88.84	11.16	92.86	7.14	54.91	45.09
Magister	68.42	31.58	84.21	15.79	89.47	10.53	96.49	3.51	61.40	38.60
Doctor	100.00	0.00	100.00	0.00	100.00	0.00	100.00	0.00	66.67	33.33
Years of service										
1-7	80.95	19.05	75.00	25.00	86.90	13.10	94.05	5.95	57.14	42.86
8-14	66.10	33.90	76.27	23.73	91.53	8.47	93.22	6.78	59.32	40.68
15-21	64.10	35.90	74.36	25.64	85.90	14.10	97.44	2.56	53.85	46.15
22-28	49.15	50.85	76.27	23.73	89.83	10.17	91.53	8.47	54.24	45.76
29-35	54.17	45.83	66.67	33.33	95.83	4.17	91.67	8.33	58.33	41.67
>35	50.00	50.00	50.00	50.00	75.00	25.00	100.00	0.00	25.00	75.00
Subject										
Mathematics	54.35	45.65	69.57	30.43	89.13	10.87	93.48	6.52	54.35	45.65
English	54.84	45.16	70.97	29.03	90.32	9.68	100.00	0.00	54.84	45.16
Science	59.18	40.82	81.63	18.37	87.76	12.24	97.96	2.04	59.18	40.82
Social Science	49.09	50.91	80.00	20.00	89.09	10.91	92.73	7.27	49.09	50.91
Bahasa	56.25	43.75	78.13	21.88	87.50	12.50	90.63	9.38	56.25	43.75
ICT	47.37	52.63	68.42	31.58	100.00	0.00	89.47	10.53	47.37	52.63
Other subjects	61.84	38.16	69.74	30.26	85.53	14.47	93.42	6.58	61.84	38.16

Knowledge on mobile learning was cross tabulated with demography profiles and results show that the percentage of teachers with a positive knowledge of mobile learning was higher than the percentage of them with low knowledge of mobile learning, for all types of school. The results also show that male teachers had a better knowledge of mobile learning than female teachers.

In the term of age, the 21-30 year old group had the highest percentage of teachers with positive knowledge of mobile learning (83.33%), followed by 31-40 and 41-50 year old groups, with 71.08% and 62.20% respectively. The lowest percentage of teachers with a positive knowledge of mobile learning was found in the 51-60 year old group. These features matched with the results of the cross-tabulated areas of knowledge and years of experience. The result reveals that young teachers with experience less than 7 years (80.95%) have better comprehensive knowledge of mobile learning compared to other teachers. Only 49.15% of teachers with 22-28 years of service had positive knowledge of mobile learning.

All teachers, in this study, with doctoral background had good understanding of mobile learning, while 83.33% of teachers with diploma background also had clear idea. Furthermore, 68.42 % and 62.05% of teachers with a Master's degree and Bachelor degree respectively, had an understanding of mobile learning. Interestingly, the lowest percentage of teachers with a positive knowledge of mobile learning, in terms of subject of teaching, was found in the group of teachers with ICT subjects (47.37%).

The learning method of mobile learning was not an issue for most of teachers. The percentage of teachers with positive responses on learning method of mobile learning was relatively high for types of school and educational background categories. Teachers in others categories of teachers' profiles also presented more positive responses on learning method issues of mobile learning.

The results also indicate that the percentage of teachers that perceived device and financial issues as an obstacle for engaging in mobile learning were significantly lower in all categories of teachers' profile than those who did not. The reason for this was that they were financially independent.

When readiness on mobile learning were cross tabulated with the demographic profile of teachers, the results show that the percentage of teachers ready for engaging in mobile learning is higher than those who are not ready in; types of school, gender, and educational background categories. In contrast, only 25% of teachers with more than 35 years of experience were ready for mobile learning. The group of teachers who were teaching ICT subjects were found to be the lowest percentage of teachers who were ready for mobile learning in terms of subject of teaching.

4. Conclusion and future work

The perception of teachers in Indonesia of mobile learning has been presented in this paper. Overall, teachers in Indonesia have a good perception towards mobile learning. Their knowledge of mobile learning was average but they had a willingness to learn more about mobile learning. Financial and device issues were not obstacles for the teachers to participate in a mobile learning environment. Interestingly, the knowledge and readiness of teachers, who taught ICT subjects, of mobile learning were lower than teachers with mathematics, science, and other subjects. Findings obtained from this study are being used as a base for designing and developing a mobile learning system, for ICT training, for teachers in Indonesia

Future work will design a mobile learning system for ICT training using mobile phones. This system will be developed to solve the problem of delivering ICT training to teachers in Indonesia. A training module will be tested using the system.

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